

**WHAT IS CLAIMED IS:**

1. An ion implanting apparatus for implanting ionized impurities into a semiconductor substrate, the ion implanting apparatus comprising:

an ionization unit operative to produce an ion beam;

an analyzer unit connected to said ionization unit downstream thereof in the apparatus such that the ion beam produced by the ionization unit passes through the analyzer unit, said analyzer unit operative to discriminate ions that are to be implanted into the substrate;

an implanting chamber connected to said analyzer unit downstream thereof in the apparatus and in which the ions are implanted into the substrate;

a vacuum unit including a vacuum pump connected to said analyzing unit so as to create a vacuum within the analyzing unit;

a vacuum gauge connected to said analyzing unit so as to measure the level of the vacuum within the analyzer unit; and

a magnetic field shield comprising a plurality of magnetic field shielding plates extending around said vacuum gauge, and dielectric material interposed between said magnetic field shielding plates, whereby the vacuum gauge is shielded from an external magnetic field.

2. The ion implanting apparatus of claim 1, wherein said vacuum gauge is a cold cathode ion gauge comprising an anode, a cathode spaced from said anode, and a permanent magnet oriented to generate a magnetic

field whose field lines extend between said anode and said cathode.

3. The ion implanting apparatus of claim 1, wherein said magnetic field shielding plates are cylindrical and concentric.

4. The ion implanting apparatus of claim 1, wherein said magnetic field shield is a cylindrical member.

5. The ion implanting apparatus of claim 1, wherein said plurality of magnetic field shielding plates comprise a first magnetic field shielding plate encircling said vacuum gauge, a second magnetic field shielding plate encircling said first magnetic field shielding plate, and a third magnetic field shielding plate encircling second magnetic field shielding plate, and said dielectric material is interposed between the first and third magnetic field shielding plates and between the second and third magnetic field shielding plates.

6. The ion implanting apparatus of claim 1, wherein said analyzer unit comprises a magnet.

7. The combination of a vacuum gauge for use in measuring the level of a vacuum within an analyzer unit of an ion implanting apparatus, and a magnetic field shield for the vacuum gauge, wherein said vacuum gauge comprises a permanent magnet, and said magnetic field shield

comprises a plurality of magnetic field shielding plates each extending around said vacuum gauge, and dielectric material interposed between said magnetic field shielding plates.

8. The combination of claim 7, wherein said vacuum gauge is a cold cathode ion gauge and further comprises an anode and a cathode spaced from said anode, and said permanent magnet is oriented to generate a magnetic field whose field lines extend between said anode and said cathode.

9. The combination of claim 7, wherein said magnetic field shielding plates are cylindrical and concentric.

10. The combination of claim 7, wherein said magnetic field shield is a cylindrical member.

11. The combination of claim 7, wherein said plurality of magnetic field shielding plates comprise a first magnetic field shielding plate encircling said vacuum gauge, a second magnetic field shielding plate encircling said first magnetic field shielding plate, and a third magnetic field shielding plate encircling second magnetic field shielding plate, and said dielectric material is interposed between the first and third magnetic field shielding plates and between the second and third magnetic field shielding plates.